

WORLD LEADER IN CONTROL & MEASUREMENT

PRODUCT GUIDE



HANYOUNG nux


BOSS automation
MARINE - INDUSTRY

WORLD AGENT

ΠΕΡΙΕΧΟΜΕΝΑ

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DR series

Ø16, Ø22 Mini Control switches

- ▶ 1a1b one-body contact
- ▶ Long life with bright LED light source
- ▶ Assembling type (actuator and contact parts)



Actuator

1 PUSH BUTTON SWITCHES

2 PILOT LAMPS

3 SELECTOR SWITCHES

4 KEY SELECTOR SWITCHES

5 EMERGENCY STOP BUTTON SWITCHES (Momentary)

6 EMERGENCY STOP BUTTON SWITCHES (Push lock turn reset)

7 PUSH BUTTON SWITCHES

8 PILOT LAMPS

9 SELECTOR SWITCHES

10 KEY SELECTOR SWITCHES

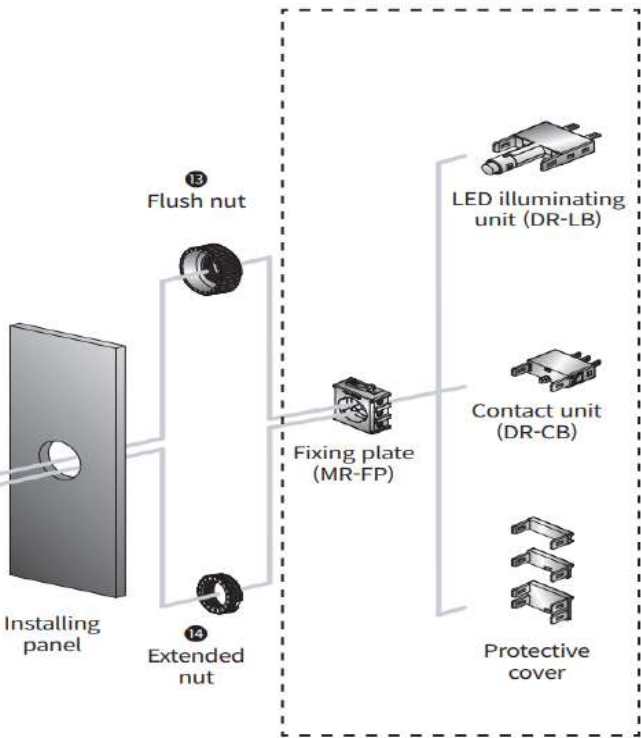
11 EMERGENCY STOP BUTTON SWITCHES (Momentary)

12 EMERGENCY STOP BUTTON SWITCHES (Push lock turn reset)

Flush (Ø22)

Extended (Ø16)
Square (Ø16)
Rectangular (Ø16)

Contact parts



Suffix code

Model	Code	Description
DRF -	☐	Push button switch
DRX -	☐	Illuminated push button switch
DRP -	☐	Pilot light
DRS -	☐	Selector switch
DRT -	☐	Illuminated selector switch
DRK -	☐	Key selector switch
DRE -	☐	Emergency stop switch
DRA -	☐	Illuminated emergency stop switch
Hole size and actuator type	A	Ø22 Flush
	R	Ø16 Extended
	K	Ø22 Flush
	T	Ø16 Extended
	S	Ø16 Square
	O	Ø16 Rectangular
		Chromium-plated guard
		Plastic guard

Type	Model	DR
Appearance		
Features	1a1b one-body type Long life with the bright LED light source The control and contact parts are modular and convenient to configure the product.	
Type	Push buttons, illuminated push buttons, pilot lamps, selectors, key selectors, illuminated selectors, emergency switches, illuminated emergency switches	
Power voltage	100-240 V a.c. 50/60 Hz, 12-24 V a.c. 50/60 Hz or 12-24 V d.c.	
Dielectric strength	1500 V a.c. 50/60 Hz for 1 min	
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INDICATOR LIGHT

Plastic guard type		CODE	COLOR	VOLTAGE
 Square ø16  DRP-S	 Rectangular ø16  DRP-O	DRP-SD	R,G,Y,W	12-24V AC/DC
		DRP-SA	R,G,Y,W	100-240VAC
		DRP-OD	R,G,Y,W	12-24V AC/DC
		DRP-OA	R,G,Y,W	100-240VAC

ILLUMINATED PUSH-BUTTON SWITCH

Plastic guard type		CODE	COLOR	VOLTAGE - CONTACTS
 Square ø16  DRX-S	 Rectangular ø16  DRX-O	DRX-SM2D	R,G,Y,W	12-24V AC/DC - 2C/O
		DRX-SM2A	R,G,Y,W	100-240VAC - 2C/O
		DRX-OM2D	R,G,Y,W	12-24V AC/DC - 2C/O
		DRX-OM2A	R,G,Y,W	100-240VAC - 2C/O

PUSH BUTTON SWITCH

Plastic guard type		CODE	COLOR	CONTACTS
 Square ø16  DRF-S	 Rectangular ø16  DRF-O	DRF-SM1 (square)	R,G	1 C/O
		DRF-OM1 (rect.)	R,G	

SELECTOR SWITCH

Plastic guard type	CODE	CONTACTS
 Rectangular ø16  DRS-O2R2	DRS-O2R2	0-(1) Return - 2C/O
	CSB16-SOM322-EB	1-0-2 2NO+2NC

Front protective cover (Protruding square)	CODE	APPLICATION
	HSC-16PS	DRF-S DRF-O DRX-S DRX-O

<u>BUZZER</u>		
MODEL	CODE	VOLTAGE - CONTACTS
 MRB-T	MRB-TDO	12-24VAC/DC
	MRB-TAO	100-240VAC

<u>INDICATOR LIGHT</u>		
MODEL	CODE	VOLTAGE - CONTACTS
 ARP-AO	ARP-FAOG	LED 100-240VAC
 ARP-DO	ARP-FAOR	

<u>PUSH BUTTON SWITCH</u>		
MODEL	CODE	VOLTAGE - CONTACTS
 ARF-F	ARF-F110G/R/B	1NO
	ARF-F112G/R	1NO+1NC

<u>PUSH BUTTON SELECTOR</u>		
MODEL	CODE	VOLTAGE - CONTACTS
 ARF-S	ARF-S112B	1NO+1NC

<u>ILLUMINATED PUSH BUTTON SWITCH</u>		
MODEL	CODE	VOLTAGE - CONTACTS
 ARX-G	ARX-G112AOG ARX-G112AOR	LED 1NO+1NC 100-240VAC
	ARX-G112DOG ARX-G112DOR	LED 1NO+1NC 12-24V AC/DC

<u>SELECTOR SWITCH (Long Handle)</u>		
MODEL	CODE	VOLTAGE - CONTACTS
 ARS-L2/3	ARS -L210	0-1 1NO
	ARS -L212	0-1 1NO+1NC
	ARS-L311	1-0-2 2NO
	ARS-L312	1-0-2 1NO+1NC

ILLUMINATED SELECTOR SWITCH

MODEL	CODE	VOLTAGE - CONTACTS
 ART-2	ART-212AOG ART-212AOR	LED 0-1 1NO+1NC 100-240VAC
	ART-212DOG ART-212DOR ART-212DOY ART-212DOA (BLUE) ART-212DOW	LED 0-1 1NO+1NC 12-24V AC/DC
 ART-3	ART-312AOG ART-312AOR	LED 1-0-2 1NO+1NC 100-240VAC
	ART-312DOG ART-312DOR ART-312DOY ART-312DOA (BLUE) ART-312DOW	LED 1-0-2 1NO+1NC 12-24V AC/DC

EMERGENCY STOP SWITCH (Push Lock Turn Reset)

MODEL	CODE	VOLTAGE - CONTACTS
 ARE-3 (Φ30 Head)	ARE-3R12R	1NO+1NC
ARE-4 (Φ40 Head)	ARE-4R12R	

ILLUMINATED PUSH BUTTON SWITCH (ON/OFF)

MODEL	CODE	VOLTAGE - CONTACTS
 ARX-S	ARX-S12AOY	LED 1NO+1NC 100-240VAC
	ARX-S12DOY	LED 1NO+1NC 12-24V AC/DC

KEY SELECTOR SWITCH

MODEL	CODE	VOLTAGE - CONTACTS
 ARK-2/3	ARK-210	0-1 1NO
	ARK-212	0-1 1NO+1NC
	ARK-312	1-0-2 1NO+1NC

H AR Accessories

Model	Emergency sign nameplate		Tightening tool	
	EN-26	HEG-22	FIX HEAD-MR	FIX HANDLE
Application Model	ARE	ARE	Ø22, Ø25	Ø22, Ø25
Appearance				

H Component Configuration

Model	Shape	Format	Note	Model	Shape	Format	Note
Switch unit		AR-10a (1a Contact)	Replaced or added by using a bolt.	Square spinning prevention plate			AR-68 Prevents the spinning.
		AR-20b (1b Contact)		Standard		AR-71 Attached to the standard type name plate and used.	
Alternate operation unit		AR-50	Used when changing from a momentary operation to an alternate operation.	Name plates Large		AR-72 Attached to the large type name plate and used.	
Name platet		AR-62	Attaching a name plate prevents the spinning and looks more organized.	Water proof cap			AR-73, 74 Water proof silicon transparency rubber cap. AR-73 : For ARF-F AR-74 : For ARX-G
		AR-63					AR-75, 76 Water proof silicon transparency rubber cap. AR-75 : For ARE-5B AR-76 : For ARE-7B
Spin prevention ring		AR-65	Prevents the spinning and looks more organized.	Protective cover			AR-77 Used in order to prevent the switch to cause malfunction. But it only be used with the flush type.
		AR-66	Prevents the spinning.	Guides Brackets			AR-67 Used when attaching onto Ø30 hole panel.

CODE	DESCRIPTION
AR-10a	CONTACT 1NO
AR-20b	CONTACT 1NC
AR-62	NAME PLATE
AR-72	NAME PLATE
AR-73	SILICON CAP For ARF-F
AR-74	SILICON CAP For ARX-G
AR-67	BRACKET

■ Temperature Controllers

Type	LCD Temperature Controllers	
Model	VX series	
Appearance		
Features	- Wide viewing angle LCD and white backlight - Several input sensor support (TC, RTD, Voltage, Current) - High precision (0.2 % accuracy) - High speed sampling cycle (50 ms) - IP65 (IEC 60529) front degree of protection - Convenient parament setting by USB cable	
Power voltage	100-240 V a.c. 50/60 Hz, 24 V d.c., Class2	
Accuracy	±0.2 % of FS ± 1 digit	
Input	RTD, thermocouple, DC voltage, DC current	
Output	Relay output, SSR output, current output	
Control type	ON/OFF, PID control, 2DOF PID control	
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CODE	DESCRIPTION
VX4-UMNA-A1	- LCD Digital Temperature Controller 48x48x63 - Universal Input - OUT 1: Relay 100-240VAC - Relay 1
VX7-UMNA-A2	- LCD Digital Temperature Controller 72x72x63 - Universal Input - OUT 1: Relay 100-240VAC - Relay 2
VX7-UMNA-A2T	- LCD Digital Temperature Controller 72x72x63 - Universal Input Sensor - OUT 1: Relay 100-240VAC - Relay 2 4-20mA
VX9-UCNA-A2T	- LCD Digital Temperature Controller 96x96x63 - Universal Input Sensor - SCR 100-240VAC - Relay 2 4-20mA

■ Temperature Controllers

Type	Multi Input / Output Temperature Controllers	Easy Operation Temperature Controllers	Multi Input Temperature Controllers	
Model	NX series	DX series	AX series	KX series
Appearance				
Features	- Fuzzy function, PID auto-tuning 3 zone PID/ Group PID 3 types - Ramp control function - Heating / cooling control, Heater break alarm 3 set value type selection function by digital input (DI) - Communication function (RS485/422)	- PID auto-tuning - Direct/reverse operation internal selection - High and Low alarm output - Control loop break alarm (LBA) - Decimal point display and high / low setting limitation - Retransmission output	- Multi Input - High speed sampling cycle (0.1 sec) - Installation depth: 63 mm - Control output selectable : reverse operation/ direct operation - Control loop break alarm (LBA)	- Multi Input - Decimal point position selection 2-stage step function by external contact (KX4S) - Output operation selectable : reverse operation/direct operation - PID auto-tuning
Power voltage	100-240 V a.c. 50/60 Hz, 24 V d.c.		100-240 V a.c. 50/60 Hz	100-240 V a.c. 50/60 Hz, 24 V d.c. (Exclude KX4S)
Accuracy	0.5 % of FS		±0.3 % of FS	0.5 % of FS
Input	RTD, thermocouple, DC voltage			
Output	Relay output, SSR output, current output			
Control type	PID control/ ON-OFF control			
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CODE	DESCRIPTION
DX9-PMWNRA	- Digital Temperature Controller 96X96mm - RTD (Pt 100 Ω) - Relay Contact Input - Alarm Output 2 contacts - Reverse Action (heating control)
NX4-03	- Multi Input/Output Temperature Controller 48X48mm - Normal Type (Heating Control) - RET, RS485
NX7-1	- Multi Input / Output Temperature Controller 72x72mm - Heating / Cooling Control (simultaneous)
KX4S-MCNA (11P)	- Digital Temperature Controller (Multi Input) 48x48mm - Relay - Alarm Output Kx4n,kx4s only 100-240VAC
KX4N-MCNA	
KX4N-MENA	- Digital Temperature Controller (Multi Input) 48x48mm - Relay - Alarm Output KX2N,KX3N,KX9N 100-240VAC
KX3N-CENA	- Digital Temperature Controller (Multi Input) 96X48mm - ALARM OUTPUT KX4N,KX4S - SCR (Current 4-20mA d.c.) - Alarm Output KX2N,KX3N,KX9N 100-240VAC
KX9N-CENA	- Digital Temperature Controller (Multi Input) 96x96mm - SCR (Current 4-20mA d.c.) - Alarm Output KX2N,KX3N,KX9N 100-240VAC

■ Temperature Controllers

Type Model	Easy Operation Temperature Controllers		Temperature Controllers Without Indicator	
	HY-8000S / 8200S / 72D / 48D	DF2	HY-1000, HY-2000, ND4	ND4
Appearance				
Features	- Proportional control or ON / OFF control - Convenient temperature setting - Alarm setting (HY-8200S) - Sharp digital display	- Proportional control or ON / OFF control - Convenient temperature setting - Auxiliary output setting (SUB) - Sharp digital display	- Proportional control or ON/OFF control - Convenient temperature setting - Plug-in method - Burnout function - Strong against vibrations and impacts, so it can be installed directly on the machine	
Power voltage	110/220 V a.c. 50/60Hz (Common)	110/220 V a.c. 50/60 Hz (Common)	HY-1000 : 110/220 V a.c. 60 Hz (Common) HY-2000 : 110/220 V a.c. 60 Hz (Common)	110 V a.c. 60 Hz, 220 V a.c. 60 Hz ※ The ND4 power voltages are divided into 110 V and 220 V specifications.
Accuracy	±1 % of FS ±1 Digit		Non-indicating	
Input	RTD, thermocouple, DC voltage		RTD, thermocouple	
Output	Relay output, SSR output, current output		Relay output	
Control type	Proportional control			
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CODE	DESCRIPTION
HY-48-PMNRA04	48 X 48mm - RTD , Pt 100Ω (IEC) - Relay contact output, Alarm output: None - Reverse action (Heating Control) 100-240VAC 50-60Hz
HY-8200S-PMORA02	- Digital Temperature Controller 96 X 96mm - RTD , Pt 100Ω (IEC) - Relay contact output - High alarm - Reverse action (Heating Control) 100-240VAC - Pt100 Ω (0-199 degrees)
ND4-PPMR03 (8P)	- Temperature Controller Without Indicator - Proportional control - RTD Pt 100Ω (IEC751) - Control Output Relay (8P) - Reverse action (Heating Control) - Input/Range (°C): Pt 0-100
ND4-PPMR03(T)	- Temperature Controller Without Indicator - Proportional control - RTD Pt 100Ω (IEC751) - Control Output Relay - Reverse action (Heating Control) Terminal Type - Input/Range (°C): Pt 0-100
ND4-PPMR05 (8P)	- Temperature Controller Without Indicator - Proportional control - RTD Pt100 Ω (IEC751) - Control Output Relay (8P) - Reverse action (Heating Control) - Input/Range (°C): Pt 0-200
ND4-PPMR07 (8P)	- Temperature Controller Without Indicator - Proportional control - RTD Pt100 Ω (IEC751) - Control Output Relay (8P) - Reverse action (Heating Control) - Input/Range (°C): Pt 0-400

■ Temperature Controllers

Model		ED6
Appearance		
W×H×D(mm)		77.0×35.0×70.5
Power voltage		100-240 V a.c. 50/60 Hz, 10-24 V a.c. 50/60Hz or 10-24 V d.c.
Power consumption		5.5 VA
Input sensor		K, Pt100 Ω, 4-20 mA d.c., 1-5 V d.c.
Accuracy		± 0.5 % of FS ±1 Digit
Control output (Main Output)	Relay output	Contact configuration: 1 c, 250 V a.c. 5 A (resistive load)
	SSR	Approx. 5 V d.c. (load resistance min. 500 Ω) max. approx. 50 mA
Control type		Proportional control, ON/OFF control selectable by setting
Setting method		Set, increase, decrease, digital method by key
Other features		Sub output (alarm, defrost timer), heating / cooling dual usage
Ambient temperature & humidity		0 - 50 °C, 35 ~ 85 % RH (Without condensation)
Weight (g)		116

CODE	DESCRIPTION
ED6-FPMAP4	- Digital Temperature Controller - ON/OFF , Proportional control selectable by setting - Input: RTD Pt100 Ω (IEC 751) - Relay Output - Alarm or defrost timer (Alarm or Defrost) - Power Voltage: 100-240VAC 50/60Hz

Type	Temperature Controllers For Refrigerators		Temperature Controllers For Greenhouses
Model	BR6A	BR6	HD6
Appearance			
Features	- Heating/cooling control selection - Alarm output, timer output selection - ON/OFF, Proportional control selection 0.1°C / 1°C selection - Delay output time setting - Operation convenience improved with the set move key	- Heating/cooling control selection - Alarm output and timer output selection - ON/OFF, Proportional control selection 0.1°C / 1°C selection - Delay output time setting	- Greenhouse open / close motor control only 1-, 2-stage control operation according to set value - Hysteresis setting by ON/OFF output - Operation according to temperature and time setting 0.1°C display function
Power voltage	100-240 V a.c. 50/60 Hz or 100-240 V d.c.	100-240 V a.c. 50/60 Hz 10-24 V a.c. 50/60 Hz or 10-24 V d.c.	100-240 V a.c. 50/60 Hz
Accuracy	±1 % of FS ±1 Digit		±1 % of FS
Input	Hanyoung Nux exclusive sensor (TH-570N)		Hanyoung Nux exclusive sensor (TH-540N)
Output	Relay output, SSR output		Relay output
Control type	Proportional control, ON/OFF control		
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CODE	DESCRIPTION
BR6-HAK-3M	Digital Temperature Controller (Basic specification: alarm output 1 contact)

■ Counter / Timers

Type	LCD Counter / Timers	
Model	LC series	
Appearance		NEW
Features	- Improved visibility with the wide viewing angle LCD and white display - Using the tack switch and applying ABS material (enhanced durability) - IP66 Protection Structure (Front of Product) - Pre-scale setting range expanded (0.00001 ~ 999999) - Support for RS485 Communication (Modbus RTU)	
Power voltage	100-240 V a.c. 50/60 Hz, 24-48 V a.c. 50/60 Hz or 24-48 V d.c. (Voltage fluctuation rate: ±10 %)	
Type	Preset method	
Control functions	Counter, Timer	
Display digits	4 digits, 6 digits	
Setting stages	1-stage setting, 2-stage setting	
Page	54	

CODE	DESCRIPTION
LC3-61N	- LCD Counter / Timer 96x48mm 6 digit display 1 Stage setting 100-240VAC

■ Multi Pulse Meters

Type	Digital Voltmeter / Ammeters	
Model	BS	BA1
Appearance		
Features	- Bright and clear LED display - Cost-effective - Max. display 1999 - Average value measurement	
Power voltage	BS1: 100-240 V a.c. 50/60 Hz, BS3/6: 110/220 V a.c. 50/60 Hz (Common)	5 V d.c., 12-24 V d.c.
Display digits	±19999	
Functions	Polarity display (BS3) Indication value hold by external contact	Decimal point and polarity display over range indication
Input	4 - 20 mA d.c. / 1 - 5 V d.c. AC voltmeter / AC ammeter / DC voltmeter / DC ammeter	4 - 20 mA d.c. / 1 - 5 V d.c. DC voltmeter / DC ammeter
Output	Indication only	
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CODE	DESCRIPTION
BS6-ND21-3	- Digital Ammeter 72x36mm - Display only - DC ammeter 4-20mA 110/220 VAC 0-199,9A 100Ω 150mA

■ Analog Timer

Type	Timing Relays	ON-Delay Timer	Twin / Dual Timers	Multi Timers	Star-Delta Timers
Model	T21	T38N, T48N, T57N	TF62N, TF62D	MA4N	MA4SD
Appearance					
Features	- Timing Relay (time limit 4c) - Plug-in type (14 pins) - Time range and operation mode customizable by the user - Several time ranges - Multi operation mode	- Time progress display using ON LED - Several time ranges (7 types) - Time unit selectable (hours, minutes, seconds) - Several model configurations (5 types)	- Time progress display using ON LED - Several time ranges (7 types) - Time unit selectable (hours, minutes, seconds) - Several model configurations (5 types)	- Output operation modes (6 types) - Multi range (4 types) - Time units (4 types) - Reset, start and inhibit inputs	8-pin plug type - High capacity motor start timer - Star-delta contact outputs, instantaneous contact outputs - Wide power specifications (AC/DC dual usage)
Power voltage	100-120 V a.c. 50/60 Hz, 200-230 V a.c. 50/60 Hz, 24 V d.c.	24-240 V a.c. 50/60 Hz or 24-240 V d.c., 12 V d.c. (T48N Only, Order Specification)	24-240 V a.c. 50/60 Hz or 24-240 V d.c.		100-240 V a.c. 50/60 Hz, 24-240 V d.c.
Time specs	0.1 s ~ 24 hour	0.01 s ~ 60 hour	Time range selection (3 types)	Minimum spacing interval : 1 minute	1~300 s
Page	62	63	64	65	66

CODE	DESCRIPTION
T21-14A20	- Multi-timing Relay 1s , 10s , 1min , 10min (Selected by side dip switch) 4a4b (14PIN) 200-230VAC
T21-34A20	- Multi-timing Relay 3s , 30s , 3min , 30min (Selected by side dip switch) 4a4b 200-230VAC
T21-64A20	- Multi-timing Relay 6s , 60s , 6min , 60min (Selected by side dip switch) 4a4b 200-230VAC
T21-3H-4A20	- Multi-timing Relay 3h, 6h, 12h, 24h (Selected by side dip switch) 4a4b 200-230VAC
T21-14D24	1s , 10s , 1min , 10min (Selected by side dip switch)
T21-34D24	3s , 30s , 3min , 30min (Selected by side dip switch) 4a4b 24VDC
T21-64D24	6s , 60s , 6min , 60min (Selected by side dip switch)
T21-34A10	3s , 30s , 3min , 30min (Selected by side dip switch) 4a4b 100-120VAC

■ Analog Timer

CODE	DESCRIPTION
T48N-10B (T48A-1B-A)	• 48X48mm • 10s,min,h (1s , 1min , 1h) • Time Limit: 1c contact • Instantaneous: 1c contact 24-240V AC/DC 50/60Hz
T48N-30B (T48A-3B-A)	• 48X48mm • 30s,min,h (3s , 3min , 3h) • Time Limit: 1c contact • Instantaneous: 1c contact 24-240V AC/DC 50/60Hz
T48N-60B (T48A-6B-A)	• 48X48mm • 60s,min,h (6s , 6min , 6h) • Time Limit: 1c contact • Instantaneous: 1c contact 24-240V AC/DC 50/60Hz
T48N-10C (T48A-1C-A)	• 48X48mm • 10s,min,h (1s , 1min , 1h) • Time Limit: 2c contact 24-240V AC/DC 50/60Hz
T48N-30C (T48A-3C-A)	• 48X48mm • 30s,min,h (3s , 3min , 3h) • Time Limit: 2c contact 24-240V AC/DC 50/60Hz
T48N-60C (T48A-6C-A)	• 48X48mm • 60s,min,h (6s , 6min , 6h) • Time Limit: 2c contact 24-240V AC/DC 50/60Hz

CODE	DESCRIPTION
TF62A-6N-A	• Twin Timer 58x84mm • 6s , 6m , 6h , 60s , 60m , 60h 24-240V AC/DC 50/60Hz
MA4N-A	• Analog Multi Timer • Time Limit 2c , 11-pin type • 24-240V AC/DC 24-240V AC/DC 50/60Hz
MA4N-B	• Analog Multi Timer • Time Limit 1c + instantaneous 1c , 11-pin type • 24-240V AC/DC 24-240V AC/DC 50/60Hz
MA4N-C	• Analog Multi Timer • Time Limit 2c , Time Limit 1c + instantaneous 1c by mode selection (8-pin type) • 24-240V AC/DC 24-240V AC/DC 50/60Hz
MA4SD	• Analog Multi Timer (Star-Delta Timer) , 48x48mm • (Star) Output , (Delta) Output • 8-pin type • 100-240VAC , 24-240VDC 24-240V AC/DC 50/60Hz

Timers

Model	LT1	LT1-F
Appearance		
W×H×D(mm)	48.0×24.0×54.0	
Input type	Non-voltage input (no display)	Voltage input (24-240 V a.c. / 6-240 V d.c.)
Power voltage	Lithium battery built-in	
Operation type	UP Timer	
Time display	9999 h 59 m 59 s / 99999 h 59.9 m / 999999 h 59 m / 9999999.9 h	
Time accuracy	± 0.01 %	
Input conditions	- Residual voltage when breaks : 0.7 V - Max. impedance when breaks: max, 10 kΩ - Min impedance when opens: min, 1 MΩ	
Battery life	More than 10 years (approx. 25 °C) ※ This is calculated value so it is not certified value (Replacing cycle reference value)	
External setting switch	- SW1 : Internal battery ON/OFF, front reset key selectable - SW2 : Time range selection	
External connection	Terminal Blocks (4P)	
Display method	7 Segment LCD (Character height : 8.7 mm)	
Display digits	8 Digits	
Insulation resistance	Min. 100 MΩ (500 V d.c.), conductive terminal - unfilled metal	
Dielectric strength	2000 V a.c. 50/60 Hz for 1 min (Conductive terminal - unfilled metal)	
Vibration resistance	10 ~ 55 Hz, double amplitude 0.75 mm, 3 axes each direction, 2h	
Shock resistance	300 m/s ² , 3 axes each direction each 3 times	
Ambient temperature & humidity	-10 ~ 55 °C / 35 ~ 85 % RH (Without condensation)	
Storage temperature	-20 ~ 65 °C	
Degree of protection	IP66 (IEC 60529) (Front side)	
Weight (g)	58	

CODE	DESCRIPTION
LT1-F	- Digital Timer - Voltage input (24-240VAC / 6-240VDC) - Lithium battery built-in - Terminal Blocks (4P) 9999 h 59 m 59 s / 99999 h 59.9 m / 999999 h 59 m / 9999999.9 h

Proximity Sensors

Type	Inductive Round Type Proximity Sensors	Inductive Square Type Proximity Sensors	Inductive Flat Type Proximity Sensors	Capacitive Type Proximity Sensors
Model	UPCR series	UPCS series	UPCF series	CUP series
Appearance				
Features	- Wide operating voltage (5-35 V d.c. : DC 3-wire) - Noise resistant reinforced circuit 2-wire type nonpolar applied	- Wide operating voltage (5-35 V d.c. : DC 3-wire) - Noise resistant reinforced circuit 2-wire type nonpolar applied	- Wide operating voltage - Noise resistant reinforced circuit 2-wire type proximity nonpolar applied	- Noise resistant reinforced circuit - Leakage current less than 2 mA 20-240 V a.c. 50/60 Hz or 20-240 V d.c.
Power voltage	12-24 V d.c., 100-240 V a.c. 50/60 Hz			12-24 V d.c., 20-240 V a.c. 50/60 Hz or 20-240 V d.c.
Shield	Shield, Non shield		-	Non shield
Sensing distance	1.5, 2, 4, 5, 8, 10, 15 mm	2, 4, 5, 8, 10, 12, 15, 20 mm	8 mm	8, 15 mm
Protective Structure	IP67			
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CODE	DESCRIPTION
UP-25F-8AA	- Inductive Type Proximity Sensor 25.7x49x10.5 - Flat type - Sensing Distance of 8mm - AC 2 wire type - NO 100-240VAC - Cable Type 2m , Pin Connector Type

LIMIT SWITCHES

HY-M900/LM900 series



Model		Roller plunger		Top ball plunger		Variable roller		Variable rod wire		Roller lever		Coil spring		Ø50 roller lever	Fork roller lever
		HY-M902	HY-LM902	HY-M903	HY-LM903	HY-M904	HY-LM904	HY-M907	HY-LM907	HY-M908	HY-LM908	HY-M909	HY-LM909	HY-M908R	HY-M908L
Appearance															
Operation speed		0.1 ~ 1 ms													
Opening and closing frequency	Mechanical	120 times/minute													
	Electrical	20 times/minute													
Insulation resistance		100 MΩ or more (500 V d.c.)													
Dielectric strength		● 1000 V a.c. 50/60 Hz for 1 min (between charging part), ● 1500 V a.c. 50/60 Hz for 1 min (between discharging part)													
Contact resistance		Max. 100 mΩ (initial)													
Vibration	Malfunction	10 ~ 55 Hz double amplitude width 1.5 mm													
Shock	Mechanical	1,000 ms or more (100G or more)													
	Malfunction	300ms or more (30G or more)													
Life	Mechanical	More than 1 million times													
	Electrical	More than 300,000 times													
● Rating															
Rated voltage(V)		Non-inductive load (A)				Inductive load (A)									
		Resistive load		Lamp		Inductive load		Electric motor load							
		NC	NO	NC	NO	NC	NO	NC	NO	NC	NO				
AC	125	15		3	1.5	10		3	1.5						
	250	10		2	1	6		2	1						
	480	3		1.5	0.8	2		1.5	0.75						
DC	8	15		6	3	10									
	14	15		6	3	10									
	30	6		4	3	5									
	125	0.4		0.2	0.2	0.05									
	250	0.2		0.1	0.1	0.03									

CODE	DESCRIPTION	
HY-M902	Roller Plunger	- Metal Body - IP67 1NO + 1NC
HY-M903	Top Ball Plunger	
HY-M904	Variable roller	
HY-LM904A		
HY-LM904D (24VDC)		
HY-M908	Roller lever	
HY-M908L		

HY-L800 series



Model		Roller Plunger [horizontal]	Cross roller Plunger type [vertical]	Top Plunger	Roller Adjustable Lever	Rubber Roller Adjustable Lever	Adjustable Rod Lever	Roller Lever	Coil spring
		HY-L802	HY-L802C	HY-L803	HY-L804	HY-L804RE	HY-L807	HY-L808	HY-L809
Appearance									
Frequency	Mechanical	120 times/minute							
	Electrical	30 times/minute							
Insulation resistance		100 MΩ 이상 (500 V d.c.)							
Dielectric strength		● Between terminals: 1,500 V a.c. 50/60 Hz 1 minute, ● Between non-charging metal parts: 2,000 V a.c. 50/60 Hz 1 minute							
Contact resistance		25 mΩ or less (initial value), 100 mΩ or less (after test)							
Vibration	Malfunction	10-55 Hz or more, double amplitude 1.5 mm							
Shock	Mechanical	300m/s or more (30G or more)							
	Malfunction	100m/s or more (10G or more)							
Life	Mechanical	Over 1 million times (open/close frequency 120 times/min)							
	Electrical	100,000 times or more (opening and closing frequency 20 times/min at rated load)							
Ambient temperature & humidity		-10 ~ 70 °C, 95% RH or less (20 °C) (No condensation)							
● Rating									
LOAD		Resistive load (cosφ≈1)				Inductive load (cosφ≈0.4)			
Rated voltage									
125 V a.c.		5 A				3 A			
250 V a.c.		5 A				2 A			
125 V d.c.		0.4 A				0.1 A			

CODE	DESCRIPTION
HY-L804	- Plastic Body - Roller Plunger (horizontal)

HY-LS800 series



Model		Roller Plunger	Push Plunger	Roller Arm	Rubber Roller Lever	Roller Adjustable Lever	Adjustable Rod Lever	Roller Lever
		HY-LS802N	HY-LS803N	HY-LS803RN	HY-LS804RE	HY-LS804N	HY-LS807N	HY-LS808N
Appearance								
Frequency	Mechanical	120 times/minute						
	Electrical	30 times/minute						
Insulation resistance		100 MΩ or more (500 V d.c.)						
Contact resistance		25 mΩ or less (initial value)						
Dielectric resistance		● 1,000 V a.c. 50/60 Hz for 1 minute, ● 2,000 V a.c. 50/60 Hz 1 minute						
Vibration	Malfunction	10-55 Hz double amplitude 1.5 mm						
Shock	Mechanical	1000 m/s or more (100 G or more)						
	Malfunction	300 m/s or more (30 G or more)						
Life	Mechanical	More than 1 million times						
	Electrical	100,000 times or more						
Ambient temperature and humidity		-10 ~ 70 °C, 95 % RH or less (20 °C) (No condensation)						
● Ratings								
Rated voltage (V)		Non-inductive load (A)		Inductive load (A)				
		Resistive load	Lamp	Inductive load		Electric motor load		
				NO	NC	NO	NC	
AC	125	6	2	6		3		
	250	6	1.5	6		1.5		
DC	8	6	4	6		4		
	14	6	4	6		4		
	30	4	2.5	4		2.5		
	125	0.4	0.1	0.4		0.1		
	250	0.2	0.05	0.2		0.05		

CODE	DESCRIPTION
HY-LS802N	• Roller Plunger
HY-LS803N	• Push Plunger
HY-LS804RE	• Rubber Roller Lever
HY-LS804N	• Roller Adjustable Lever
HY-LS808N	• Roller lever

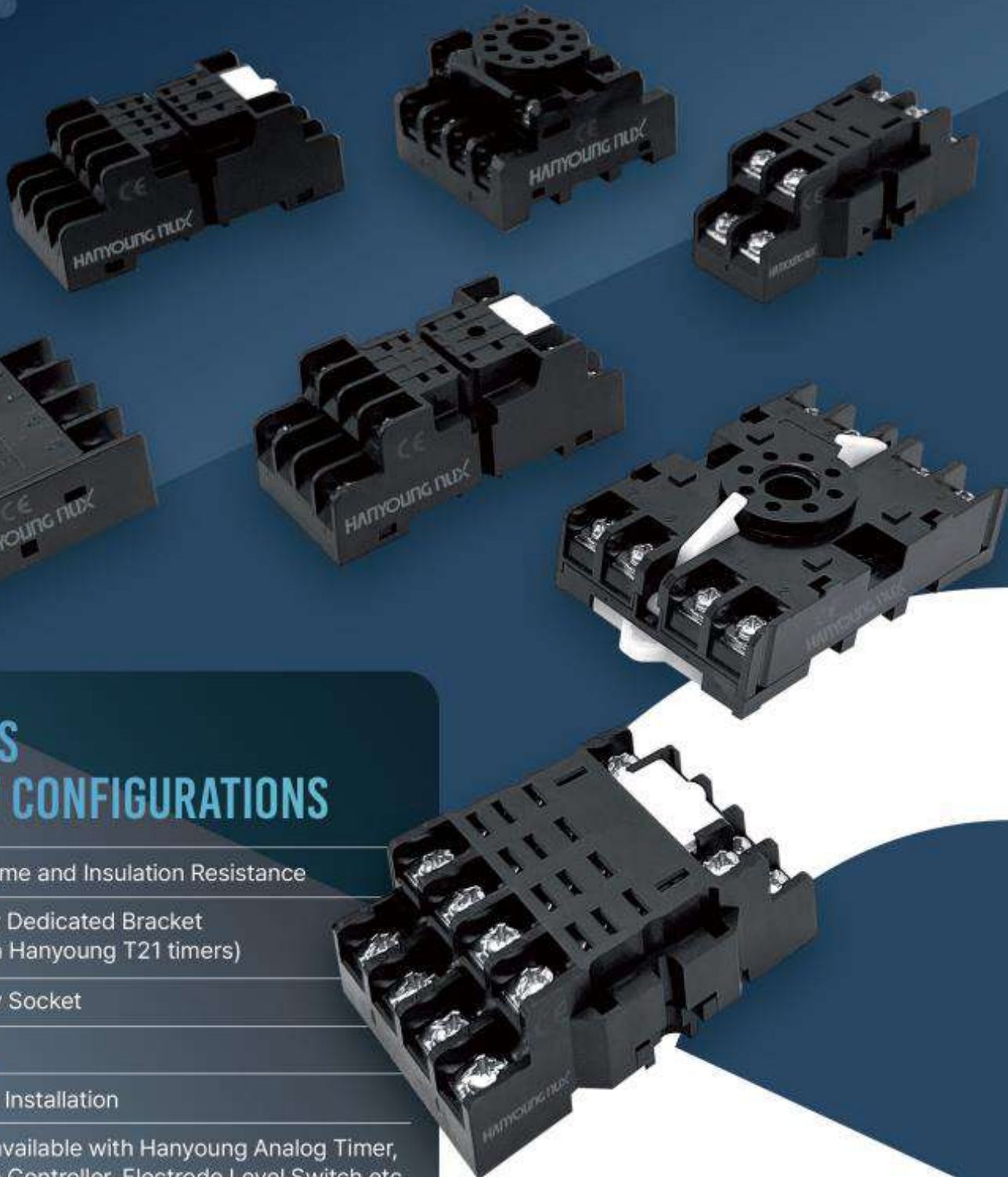
ZCN-500 series



Model		Plunger	Hinge roller short lever	Hinge roller long lever	Hinge short lever	Hinge lever	Hinge long lever	Vertical roller plunger	Horizontal roller plunger	Resin road spring
		ZCN-P5010	ZCN-R504A	ZCN-R504C	ZCN-L507A	ZCN-L507C	ZCN-L507D	ZCN-PR508V	ZCN-PR508H	ZCN-L509
Appearance										
Operation speed		0.1 mm - 0.5 mm								
Frequency	Mechanical	120 times/minute								
	Electrical	20 times/minute								
Insulation resistance		100 MΩ or more (500 V d.c.)								
Contact resistance		25 mΩ or less (initial value), 100 mΩ or less								
Dielectric strength		● Between charging part : 1000 V a.c. 50/60 Hz for 1 min, ● between discharging part : 1500 V a.c. 50/60 Hz for 1 min								
Vibration	Malfunction	10-55 Hz double amplitude 1.5 mm								
Shock	Mechanical	1000 m/s or more (100 G or more)								
	Malfunction	300 m/s or more (30 G or more)								
Life	Mechanical	More than 1 million times								
	Electrical	More than 300,000 times								
Ambient temperature and humidity		-10 ~ 80 °C 25 ~ 95 % RH (No condensation)								
● Ratings										
Rated voltage(V)		Non-inductive load(A)		Inductive load (I(A))						
		Resistive load		Inductive load		Electric motor load				
		NC	NO	NC	NO	NC	NO			
AC	125	15		10		3		1.5		
	250	10		6		2		1		
	600	3		2		1.5		0.75		
DC	8	15		10		-		-		
	14	15		10		-		-		
	30	6		5		-		-		
	125	0.4		0.05		-		-		
	250	0.2		0.03		-		-		

CODE	DESCRIPTION
ZCN-L507D	● Hinge Long lever ○
ZCN-PR508H	● Horizontal roller plunger
ZCN-R504C	● Hinge roller long lever
ZCN-P5010	● Plunger

8-Pin, 11-Pin Universal Socket Relay Socket



VARIOUS SOCKET CONFIGURATIONS

Excellent Flame and Insulation Resistance

Timing Relay Dedicated Bracket
(applied with Hanyoung T21 timers)

MY, LY Relay Socket

CE Certified

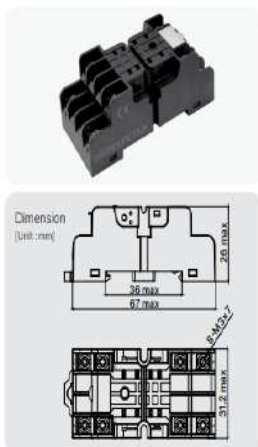
Easy DIN rail Installation

Application available with Hanyoung Analog Timer,
Temperature Controller, Electrode Level Switch etc.
(8-Pin socket)

HANYOUNG NUX

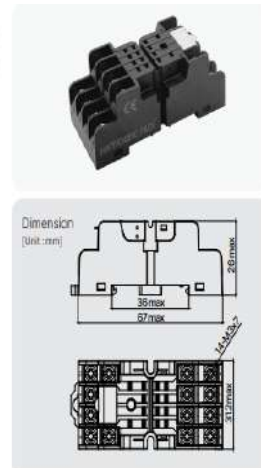
MY Type 2 Pole Relay Socket HS-R-M02

Material	1. Plastic ① Socket : PC (black) ② Stopper : POM 2. Metal ③ Nut : carbon steel Q195, Bolt : carbon steel 08A 3. Connecting piece : brass H62
Flame Resistance	Flammability Rate V2
Bolt	Torque ≥ 0.8 N.m
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust
Electroplating	Connecting piece : CrSn, Bolt : zinc
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA
Clamping Force	1pin clamping force : 1 N - 20N
Installation Hole Dimension	 



MY Type 4 Pole Relay Socket HS-R-M04

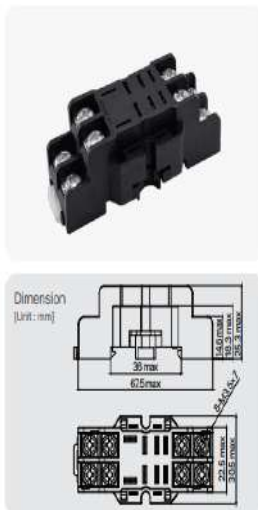
Material	1. Plastic ① Socket : PC (black) ② Stopper : POM 2. Metal ③ Nut : carbon steel Q195, Bolt : carbon steel 08A 3. Connecting piece : brass H62
Flame Resistance	Flammability Rate V2
Bolt	Torque ≥ 0.8 N.m
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust
Electroplating	Connecting piece : CrSn, Bolt : zinc
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA
Clamping Force	1pin clamping force : 1 N - 20N
Installation Hole Dimension	 



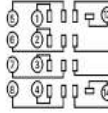
CODE	DESCRIPTION
HS-R-M02	2-Pole Base
HS-R-M04	4-Pole Base

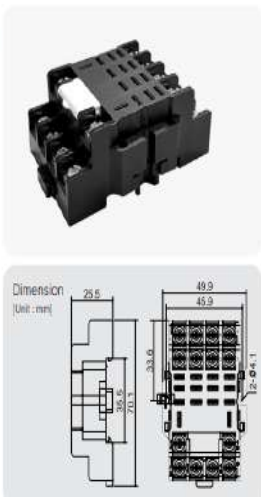
LY Type 2 Pole Relay Socket HS-R-L02

Material	1. Plastic ① Socket : PC (black) ② Stopper : POM 2. Metal ③ Nut : carbon steel Q195, Bolt : carbon steel 08A 3. Connecting piece : brass H62
Flame Resistance	Flammability Rate V2
Bolt	Torque ≥ 0.6 N.m
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust
Electroplating	Connecting piece : CrSn, Bolt : zinc
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA
Clamping Force	1pin clamping force : 1 N - 20N
Installation Hole Dimension	 



LY Type 4 Pole Relay Socket HS-R-L04

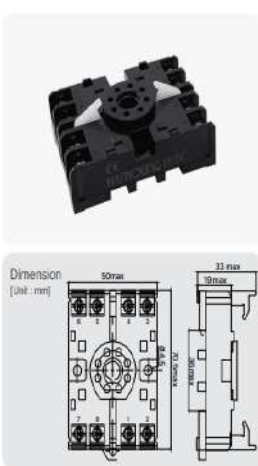
Material	1. Plastic ① Socket : PC (black) ② Stopper : POM 2. Metal ③ Nut : carbon steel Q195, Bolt : carbon steel 08A 3. Connecting piece : brass H62
Bolt	Torque ≥ 0.6 N.m
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust
Electroplating	Connecting piece : CrSn, Bolt : zinc
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA
Clamping Force	1pin clamping force : 1 N - 20N
Connection Diagram	



CODE	DESCRIPTION
HS-R-L02	2-Pole Base
HS-R-L04	4-Pole Base

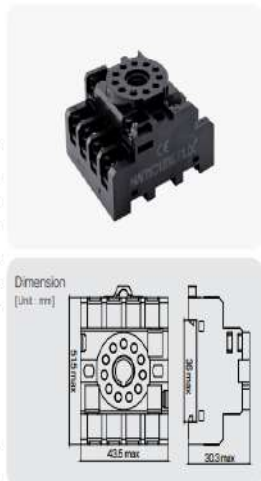
8-PIN Universal Socket HS-G-E08

Material	1. Plastic ① Socket : PC (black) ② Ring : POM 2. Metal ③ Nut : carbon steel Q195, Bolt : carbon steel C-1022A 3. Connecting piece : brass H62
Flame Resistance	Flammability Rate V2
Bolt	Torque ≥ 0.8 N.m
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust
Electroplating	Connecting piece : CrSn, Bolt : zinc
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA
DIN rail Torque Breakage	Breakage value ≥ 20kg
Clamping Force	Total Clamp Force : 40N - 90N 1pin Pluck Power : 1N - 35Nm 1pin Clamp Force : 2N - 8Nm
Installation Hole Dimension	 
Applied products	ND4 / DF4 / LT4 / LT4S / T39A / T48A / TF62A / MA4N-C / FS-3A / MA4SD / GF4A-P4'S / GF4A-T4D5 / TF4A



11-PIN Universal Socket HS-G-E11

Material	1. Plastic ① Socket : PC (black) ② Ring : POM 2. Metal ③ Nut : carbon steel Q195, Bolt : carbon steel 08A 3. Connecting piece : brass H62
Flame Resistance	Combustion temperature : 650°C, Combustion Duration 1R ≤ 30s
Bolt	Torque ≥ 0.6 N.m
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust
Electroplating	Connecting piece : CrSn, Bolt : zinc
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA
Clamping Force	1pin clamping force : 2N - 15N
Installation Hole Dimension	 
Applied products	KX4S / MA4N-A / MA4N-B



LLCODE	DESCRIPTION
HS-G-E08	8-Pin Base
HS-G-E11	11-Pin Base

■ Temperature Controllers

Type	Multi-Channel Digital Temperature Controllers	Modular Multi-Channel Temperature Controllers	Multi Input Temperature Controllers
Model	MC9	ML series	MT100
Appearance			
Features	4/8 channel control function - Multi-memory function (ax 8 X 8) - Heating / cooling control (4 channels) - Digital input(DI) - Communication function (RS232, RS485/422)	- Sampling cycle 50 ms 8 Event output contact units - Max. 32 parallel connections (including ML-E) - Unit power, communication connection by side connector - Communication function (RS232C, RS485)	- Input 4 channels (control: 2 channels, monitoring: 2 channels) - Temperature, pressure, current detection alarm functions - Abnormal history display and saving functions - Medium replenishment and suction function - Communication function (RS485/422)
Power voltage	100-240 V a.c. 50/60 Hz	24 V d.c.	100-240 V a.c. 50/60 Hz
Accuracy	$\pm 0.3\%$ of FS ± 1 Digit		Temperature : $\pm 0.3\%$ of FS ± 1 Digit Pressure : $\pm 3\%$ of FS ± 1 Digit
Input	RTD, thermocouple, DC voltage		RTD, thermocouple
Output	Relay output, SSR output, current output, Triac output	Relay output, SSR output, current output	Relay output, SSR output
Control type	PID control / ON-OFF control		PID control
Page	40	38	39

Type	Modular Programmable Temperature Controllers	2-Channel Programmable Temperature Controllers
Model	TD510	TD300
Appearance		
Features	- Several alarm functions - Multi input (RTD, TC, VDC) - Communication function built-in (RS485) - Detachable and expandable structure - Digital Recorder function (internal memory, SD card storage) - Digital input (DI) max. 32 contacts, digital output (DO) max. 32 contacts	- Max. 100 patterns, 100 segments/pattern (total 2,400 segments) - Several alarm functions (output: 4 contacts, operation: 20 types) - Digital input (DI) 8 contacts, Digital output (DO) 8 contacts - Communication function
Power voltage	100-240 V a.c. 50/60 Hz	
Accuracy	$\pm 0.15\%$ of FS	$\pm 0.1\%$ of FS
Input	RTD, thermocouple, DC voltage	
Output	Relay output, SSR output, current output	
Control type	PID control / ON-OFF control	
Page	32	33

Type	Modular Programmable Temperature & Humidity Controllers	Programmable Temperature & Humidity Controllers
Model	TH510	TH300
Appearance		
Features	- Communication function built-in (RS485) - Detachable and expandable structure - Temperature, humidity independent PID control - Digital recorder function (internal memory, SD card storage) - Digital input (DI) max. 32 contacts, digital output (DO) max. 32 contacts	100 patterns (total 2000 segments, 100 segments / pattern) - Temperature, humidity independent PID control - Digital input (DI) 4 contacts, digital output (DO) 12 contacts - Communication function
Power voltage	100-240 V a.c. 50/60Hz	
Accuracy	Temperature: $\pm 0.1\%$ of FS / Humidity: $\pm 1\%$ of FS	Temperature: $\pm 0.2\%$ of FS / Humidity: $\pm 2\%$ of FS
Input	RTD, DC voltage	
Output	SSR output, current output	
Control type	PID control / ON-OFF control	
Page	34	35

Type	Thermal Shock Test Controllers	Programmable Temperature Controllers
Model	TS510	NP200
Appearance		
Features	- Damper & elevator method support - Multi input(RTD, TC, VDC) - Communication function built-in(RS485) - Detachable and expandable structure - Digital Recorder function (internal memory, SD card storage) - Digital input (DI) max. 32 contacts, digital output (DO) max. 32 contacts	- Multi input / output, $\pm 0.1\%$ high accuracy 30 patterns, 300 segment (1 pattern / 99 segments) - Heating / cooling PID control 3-level PID selection (4 PID groups) - PID auto-tuning mode 2 types - Digital input (DI) 7 contacts, User output (UO) 10 contacts - Communication function
Power voltage	100-240 V a.c. 50/60Hz	
Accuracy	RTD : $\pm 0.1\%$ of FS, thermocouple : $\pm 0.15\%$ of FS	$\pm 0.1\%$ of FS
Input	RTD, thermocouple, DC voltage	
Output	SSR output, current output	
Control type	PID control / ON-OFF control	
Page	37	36

Type	Board Type Temperature Controllers		Cost-Effective Digital Temperature Controllers
Model	BX8	SM100	ED6
Appearance			
Features	- Fuzzy function, PID auto-tuning 3 zone PID/ Group PID 3 types - Ramp control function - Heating / cooling control, Heater break alarm 3 set value type selection function by digital input (DI) - Communication function (RS485)	20 Channel integrated digital temperature controller ± 0.5% display accuracy of max. range - Several alarm functions (digital output 3 contacts) - Communication function built-in (RS485/422, RS232C)	- Heating/cooling control selection - Alarm output and timer output selection - ON/OFF, Proportional control selection 0.1 °C / 1 °C selection - Delay output time setting
Power voltage	100-240 V a.c. 50/60 Hz		100-240 V a.c. 50/60 Hz, 10-24 V a.c. 50/60 Hz or 10-24 V d.c.
Accuracy	±0.5% of FS ±1 Digit		±0.5 % of FS
Input	RTD, thermocouple, DC voltage		RTD, thermocouple
Output	Relay output, SSR output, current output		Relay output, SSR output
Control type	PID control/ ON-OFF control		Proportional control, ON/OFF control
Page	43		49

■ Temperature Indicators

Type	Digital Temperature Indicators	Multi Input Temperature Indicators
Model	BK3	BK6-M
Appearance		
Features	0.5 % high accuracy indicator - Simple exclusive indication - Character height 14.2/20.0 mm LED applied	- Multi Input (thermocouple, RTD, voltage - current) - Retransmission output (4 - 20 mA d.c.) - Temperature unit selection - Measured value correction function
Power voltage	110/220 V a.c. 50/60Hz(Common)	100-240 V a.c. 50/60 Hz
Accuracy	±0.5 % of FS	±0.5 % of FS ±1 Digit
Input	RTD, thermocouple, DC voltage, DC current	Multi Input (19 types), thermocouple, RTD
Page	50	51

■ Data Storage Devices

■ Floatless Level Switches

■ Electrode Holder

Type	Data Storage Devices	Floatless Level Switches	Electrode Holder
Model	EM310	FS - 3A	HY-ER3
Appearance			
Features	32 Mbyte data storage device - Convenient panel installation type (72 × 36 mm) - USB port for memory stick connection	- Used for agricultural water, water treatment plant, sewage treatment plant, factory and several surface water control - Lightweight and easy to install - Operation status is indicated by LED	- IP63 (IEC 60529) degree of protection - The PBT flame retardant provides robustness and reduces the fire risk - Body and cover are connected by hook coupling structure so they are easily detached by screwdriver
Power voltage	24 V d.c. 500 mA	110 V a.c. 50/60 Hz, 220 V a.c. 50/60 Hz	-
Page	74	75	

■ Converters

Type	Ethernet To Serial Converters	Communication Converters		Temperature / Humidity Converters
Model	HMCE-103	CV310	CV300	CV250
Appearance				
Features	- Several connection interface support (RS232 / RS485 / RS422) - Open network protocol support - Up to 3 clients can be simultaneously connected	- RS232 and RS485 / RS422 2 kV electrical insulation built-in protection device - RS485 Echo, Non-Echo function support - Excellent compatibility with fast transmission/reception switching speed - Max. 1.2 Km, 256 Node connection available	- RS422/485 Line Drive Automatic Control - Switch settings enable/disable various modes of operation - Up to 1.5 km, 256 node connectivity - LED for Power and Data Communication Status Indication	- DIN rail and bolt fixing mounting method - Uniform with DC signal - Relative humidity calculation by dry bulb temperature and wet bulb temperature - Two-wire transmission line is simple - Linear signal
Power voltage	5 V d.c. (±10 %)	9-30 V d.c.	9 V, 300mA d.c. Adapter (1.3 Ø d.c Jack)	100-240V a.c. 50/60 Hz
Page	74			

Recorders

Type	Touch Screen Recorders		2-channel temperature controllers & recorders
Model	GR200A		RT9N
Appearance	 		
Features	- High-definition screen : 5.7" 640x480 TFT-LCD - Large memory: SD and SDHC card support (internal memory: 80 MB) 3-language support: Korean, English, Chinese (simplified) - Data storage and parameter backup function with SD card - RS485/422/ETHERNET		- Multi input/output - Communication function(RS485) - Free scale function - PID auto-tuning - Temperature record & control
Power voltage	100-240 V a.c. 50/60 Hz		
Accuracy	±0.15 % of FS ±1 Digit		±0.5 % of FS
Input	RTD, thermocouple, DC voltage		
Channels	2/4/8/12 channels		1/2 channels
Contact outputs	6contacts, 12contacts		Alarm: 2 contacts, Control output: 1 contact
Page	52		53

Counter / Timers

Type	Digital Counter / Timers		Digital Counter
Model	GF series		LC1
Appearance	 		
Features	- Counter & timer functions - Pre-scale setting (GF7) 14 input operations, 16 output operations - Decimal places setting 16 timer ranges (decimal / sexagesimal 8 types) - NPN/PNP (voltage / non-voltage) input selection		- Compact LCD indicating total counter - External power not needed with the built-in battery - You can reuse the product by replacing the battery - Small Power consumption and long battery life - Non-voltage or voltage input - IP66 (IEC 60529) degree of protection (front side)
Power voltage	100-240 V a.c. 50/60 Hz		Lithium battery built-in
Type	Preset method, Indication only		Indication only
Control functions	Counter, Timer		Counter
Display digits	4 digits, 6 digits		8digits (addition)
Setting stages	1-stage setting, 2-stage setting		-
Page	55		56

Timers

Type	LCD Timers		LCD Weekly & Yearly Time Switches
Model	LT1	LF4N	LY series
Appearance			
Features	- External power not needed with the built-in battery - You can reuse the product by replacing the battery - Long battery life with small power consumption - Non-voltage or voltage input - IP66 Protection Structure (Front of Product)	- LCD display (displays several functions) - Multi input ranges (10 types) - Multi output operations (10 types) - Bar graph over time display - Reset, start and inhibit inputs	- Easy to check and change programs - Automatic change of seasonal program according to season setting function - It is possible to add the yearly program to the weekly program - The holiday setting function can block the output during the selected holidays
Power voltage	Lithium battery built-in	24-240 V a.c. 50/60 Hz or 24-240 V d.c.	100-240 V a.c. 50/60 Hz
Display digits	8 digits (addition)	3 digits	4 digits, 2 lines
Type	Indication only	-	-
Time specs	-	0.01 s ~9990 h	Minimum spacing interval: 1 minute
Page	56	60	61

Type	Digital Twin Timers		Digital Timers
Model	TT7H	TT4	TF4A
Appearance			 
Features	- Output operation control according to external START input signal - Individual setting of ON time and OFF time - Wide power specifications (100 - 240 V a.c 50/60 Hz)	- Free voltage (100 - 240 V a.c 50/60 Hz) - Dual timer & twin timer functions (Can be used as 2 independent timers) - Output operation control according to external input signal (START, RESET, INHIBIT)	- Simple functions, convenient setting - Range selection with front side deep switch (2 types) - Decimal or sexagesimal - Relay or transistor output
Power voltage	220 V a.c. 60Hz	100-240 V a.c. 50/60Hz	100-240 V a.c. 50/60 Hz, 24-60 V d.c.
Display digits	4 digits		
Time specs	0.01 s ~9999 hour		
Page	58		59

Multi Pulse Meters

Type	LCD Multi Pulse Meters	
Model	LP3	
Appearance		
Features	- Improved visibility with the wide viewing angle LCD and white display 66.4 mm Short Back Length - IP66 Protection Structure (Front of Product) - Expand Maximum Display Range : -99999 ~ 99999 - Various functions : AUTO ZERO, Start compensation timer, comparative output limit, hysteresis, Set display period, select time unit, display maximum and minimum values, electrostatic memory, etc.	
Power voltage	100-240 V a.c. 50/60 Hz	
Operation modes	Number of revolutions, frequency, speed, Moving speed, cycle, transit time, time difference, time width, measured length, interval, integration, absolute ratio, error ratio, density, error	
Input frequency	Contactless (max. 50 KHz, ON/OFF pulse width 10 us min), contact (max. 30 Hz, ON/OFF pulse width min. 16.6 ms)	
Display cycle	0.05, 0.5, 1, 2, 4, 8 sec	
Output	Proportional control, ON/OFF control	
Page	67	

Type	Small LCD Pulse Meters	Multi Pulse Meters	Digital Wattmeters
Model	LP1	BP6	WM3
Appearance			
Features	- Small LCD Pulse Meters - Rotation speed / Frequency measurement 5-digit display available - External power not needed with the built-in battery - Non-voltage or free voltage input	- Auto zero time setting - Comparative output (HH, H, GO, L, LL) - Start compensation timer function - Max. value (5 types), min value (5 types) save - Power outage compensation function - Max. 50 KHz	- Effective power display by RMS measurement - Converter not needed with the voltage and current measurement method - Several outputs (Relay 4 - 20 mA d.c open collector)
Power voltage	Lithium battery built-in	100-240 V a.c. 50/60 Hz, 24-60 V a.c. 50/60 Hz or 24-60 V d.c.	100-240 V a.c. 50/60 Hz
Operation modes	Revolution speed, frequency	Number of revolutions, frequency, speed, Moving speed, cycle, transit time, time difference, time width, pulse width, pulse interval, integration counter, absolute ratio, error ratio, density, error	- Remote local switching (communication output type) - Display max / min value by front key - Function of handling average value and delaying displaying cycle - Changing comparative output setting - Set value changing protective function
Input frequency	-	50 KHz	-
Display cycle	-	0.05, 0.5, 1, 2, 4, 8 sec	Min. : 0.1 second, Max. 2 second
Output	-	Relay, transistor	Display only, 4 - 20 mA d.c. relay (HI, GO, LO), transistor, communication (RS485)
Page	68	72	70

Type	LCD Multi Panel Meters	
Model	LM	
Appearance		
Features	- Use optical night angle LCD and white backlight - Short rear length of 68 mm (LM3) and 81 mm (LM6) - IP66 Protection Structure (Front of Product) - RMS and AVG Selection Instrumentation - MODBUS Communication Support - Maximum measurement input specification (500 V d.c., 500 V a.c., 5A d.c., 5A a.c.)	
Power voltage	100-240 V a.c. 50/60 Hz	
Display digits	-9999 ~ 9999	
Functions	Operation mode (6), hysteresis, alternating current frequency measurement, zero adjustment, initialization, lower display deviation correction, key lock transmission output scale adjustment, start compensation timer, free scale, slope adjustment, error correction, display period delay, maximum/minimum monitoring.	
Input	DV: DC voltage · DA: DC current · AV: AC voltage / frequency · AA: AC current / frequency	
Output	Contact Output : 3-layer, SPST (1a), 250 V a.c. 5A · Contactless output : 3-speed, NPN/PNP, Open Collector, 12-24 V d.c. 50mA Transmission Output (4-20 mA), RS485 Output	
Page	69	

Type	Digital Scale Meters	Non-Power Scale Meters
Model	HP3	HLP1
Appearance		
Features	- High accuracy indicator (± 0.03 % of F.S) - Max. display (-19999 ~ 99999) - Communication function (RS232 or RS485) selection	- Non-power free scale - High accuracy indicator (± 0.3 % of F.S) - Max. display (-1999 ~ 9999) - Current input (4-20mA d.c.)
Power voltage	100-240 V a.c. 50/60 Hz	Non-power
Display digits	± 19999	-1999 ~ 9999
Functions	Scale meter	
Input	1 channel 1 - 5 V d.c., 4 - 20 mA d.c.	4-20mA d.c.
Output	4 - 20 mA d.c. Alarm output 2 contacts	Indication only
Page	72	68

■ Photo Sensors

Type	General Purpose Photo Sensors	Amplifier Built-in Photo Sensors	Flat Photo Sensors
Model	PB series	PLD	PY series
Appearance			
Features	25.4mm standard mounting hole - Hanyoung Nux new ASIC chip used (operation stability, long-distance detection) - Built-in VR for sensitivity adjustment - Excellent noise immunity and reduced disturbance of light influence - Strong protection circuit	- Power reverse connection and output short - Diffuse-reflective type with 2 m of sensing distance 1 ms response time - Sensitivity adjustment volume built-in	- Light ON / Dark ON mode switching selection by control wire - Power reverse connection and output short - Convenient installation with the ultra slim size (16 X 28 X 8 mm) 1 ms response time - Control output and stable output display
Power voltage	12-24 V d.c.		
Sensing mode	Through-beam, Diffuse-reflective, Retro-reflective (mirror), Retro-reflective (polarized mirror), Distance-settable	Diffuse-reflective	Through-beam
Sensing distance	7 m, 10 m, 15 m, 0.1 - 3 m, 1 m, 100 mm, 400 mm	2m	3 m
Operating mode	Light ON , Dark ON	Light ON	Light ON , Dark ON
Operating mode	Max. 1 ms		
Protective Structure	IP65	IP64	IP67
Page	88	94	89

Type	Voltage Output Photo Sensors	Round Photo Sensors	U-Shaped Fast Response Photo Sensors	Long Distance Detection Photo Sensors
Model	PN series	PR series	PU series	PEN series
Appearance				
Features	- Power reverse connection and output short circuit protecting circuit built-in - Motion display light attached - Sensitivity adjustment volume attached	- Output cutoff over current protecting circuit built-in - Sensitivity adjustment volume attached - Light ON / Dark ON selection	- Solid die casting case - Optic axis control not needed - Sensitivity adjustment volume attached - Operating mode selection by power polarity reverse connection	- Long distance detection - Stability indication
Power voltage	12-24 V d.c.			24-240 V a.c. 50/60 Hz or 24-240 V d.c.
Sensing mode	Through-beam, Diffuse-reflective, Retro-reflective		Through-beam	Through-beam , Diffuse-reflective, Retro-reflective
Sensing distance	3 m, 0.1 - 1 m, 200 mm	7 m, 10 m, 0.1~2 m, 0.1 m, 0.4m	30 mm, 50 mm	10 m, 0.1 - 5 m, 700 mm
Operating mode	Light ON , Dark ON			
Response time	Max.3 ms	Max.1 ms	Max.1 ms	Max.20 ms
Protective Structure	-	IP66	IP65	IP64
Page	90	91	92	96

■ Photo Sensors

Type	Power /Amplifier Built-in Photo Sensors	Power Built-In Photo Sensors	Distance-settable Photo Sensors
Model	PTX series	PE series	PL-D2B
Appearance			
Features	- Terminal block type connection for convenient wiring - Wide power voltage range - Timer function available - NPN/PNP open collector simultaneous output with DC power	- Cost-effective - Wide power voltage - Relay output - Operation status indication attached - Lower impact of dust with the flat lens	- Distance setting reflective type by 2 split photo diodes - Power reverse connection and output short circuit protective circuit built-in
Power voltage	24-240 V a.c. 50/60 Hz or 24-240 V d.c.	24 V d.c., 100-240 V a.c. 50/60 Hz or 100-240 V d.c.	12-24 V d.c.
Sensing mode	Through-beam , Diffuse-reflective, Retro-reflective		Distance-settable
Sensing distance	15 m, 7 m, 1 m	5 m, 0.1 - 3 m, 500 mm	0.2 - 2 m
Operating mode	Light ON , Dark ON		
Response time	Power built-in type : max. 20 ms Amplifier built-in type : max. 1 ms	Max.25 ms	Max.2 ms
Protective Structure	IP66	IP54	IP65
Page	93	92	95

■ Fiber Optic Sensors

Type	Fiber Optic Sensors		Multi-Function Digital Fiber Optic Sensors
Model	PG series	PFB	PFD
Appearance			
Features	- Applicable to any application with the AMP unit 4 type and several fiber unit types. - Easy to install to a 35 mm wide DIN rail, so less installing space is needed.	- Sensitivity setting by auto-teaching - External teaching input/external synchronous input - Output delay time (40 ms fixed) - Light ON/ Dark ON selection by slide switch	- Sensitivity setting by auto-teaching 7-Segment 4-digit LED display - Mark detection/ counter / tachometer functions (multi-type) - Output delay time setting(1~9999 ms)
Power voltage	12-24 V d.c.		
Sensing mode	Through-beam, Diffuse-reflective		
Sensing distance	By fiber optic cable		
Operating mode	Light ON , Dark ON		
Response time	Max. 1 ms		RM : Max. 1 ms, RG : Max. 0.7 ms
Protective Structure	IP40	IP40	IP40
Page	97	99	98

■ Area Sensors

Type	Area Sensors	Area Sensors
Model	PAS series	PAN series
Appearance		
Features	- Less installation space (thickness : 13.5 mm, width : 30 mm) - Automatic sensitivity correction function built-in - Minimum sensing object (Ø30 mm)	- Several optical axis distances(20/40 mm) - Output short circuit protection circuit built-in - Operating mode selection (all optical axes/1 optical axis light ON)
Power voltage	12-24 V d.c. ±10% ripple (p-p) 10% or less	
Sensing mode	Through-beam	
Sensing distance	5 m	7 m
Operating mode	Light ON or Dark ON	Emitter : M/S mode switch switching type (Master / Slave) Receiver : D/L mode switch switching type (Dark ON, Light ON)
Response time	Max. 7 ms	Max. 15 ms
Protective Structure	IP40 (IEC Specification)	IP65 (IEC Specification)
Page	100	101

■ Sensor Controllers

Type	Sensor Controllers
Model	HPA-12
Appearance	
Features	- NPN/PNP dual usage input sensor controller - Solid output contact (250 V 3 A, more than 100,000 times) - Convenient installation with plug in method
Power voltage	220 V a.c. 50/60 Hz
Functions	Universal
Power consumption	Approx. 4 VA
External output power	12 V d.c., ± 10 %, 50 mA max.
Output	Relay 1c, 250 V a.c., 3A (resistive load)
Page	102

■ Sensor Controllers

Type	Universal	High function (timer)	For connection of 2 connections.
Model	HPAN-C7	HPAN-CT7	HPAN-C7W
Appearance			
Features	- Contact/contactless, 2 outputs built-in (HPAN-C7, HPAN-CT7) - For connecting 2 sensor - Corresponds to DIN rail		
Power voltage	100-240 V a.c. 50/60 Hz ±10 %		
Functions	2 Inputs 1 output		2 Inputs 2 output
Power consumption	Approx. 5 VA		
External output power	12 V d.c. (± 10 %), load current : max. 200 mA		
Output	Contact	OUT 1	OUT 1, OUT 2
	Contactless	Relay 1 c, 250 V a.c., 3A (resistive load) ※ HPAN - C7W (1 c X 2 relay contact)	-
Page	102		

■ Rotary Encoders

Type	Ø30, Ø40, Ø50 Shaft Type	Ø40 Hollow Shaft Type	Ø40 Blind Shaft Type	Wheel Type
Model	HE30B, HE40B, HE50B	HE40H	HE40HB	PSC
Appearance				
Features	- Wide power voltage (5 - 12 / 12 - 24 V d.c.) - Several output specifications - Convenient installation structure	- Wide power voltage (5-12 V d.c. / 12-24 V d.c.) - Several output specifications - Convenient installation structure	- Wide power voltage (5-12 V d.c. / 12-24 V d.c.) - Several output specifications - Convenient installation structure	- The wheel type detection structure is suitable for length and speed measurement - Several measuring units (6 types) - Convenient installation structure
Power voltage	5-12 V d.c.±5 %, 12-24 V d.c.±5 %, 5 V d.c.±5 %			5-12 V d.c.±5 %, 12-24 V d.c.±5 %, 5 V d.c.±5 %
Output phase difference	Phase difference between A, B phases : T/4±T/8 (1 cycle of A phase=T)			
Response time	Max.1 µs			
Number of pulses	1, 2, 5, 10, 12, 15, 20, 25, 30, 40, 45, 50, 60, 75, 100, 120, 125, 150, 192, 200, 240, 250, 256, 300, 360, 400, 500, 512, 600, 800, 1000, 1024			According to the minimum measured length
Page	103	104	105	106

■ Thyristor Power Regulators

Type	3-Phase Power Regulator	Small single-phase power regulator		Small 3-phase power regulator
Model	TPR-3	TPR-2G	TPR-2M	TPR-3M
Appearance		 NEW		
Features	- Status indication with 9 LEDs - Various alarm functions - Soft start / Soft down - Built-in fast fuse	- TPR-2N compliant - An economical price - Slim Size - Phase Control, Cycle Control (Order Specification) - Various alarm verification functions (50A/70A only)	- Several protection functions (heater break, overcurrent, heat sink overheating, SCR short circuit, etc.) - Improved safety by of circuit power supply and load power supply separation (free voltage) - SOFT START(60sec), SOFT UP/DOWN(15sec)	110 mm (width) small 3-phase slim type thyristor power regulators - Improved safety with the separate power supply 4 LEDs to check operation status and alarm - Several alarm functions. "Caution" and "warning" alarm separation.
Power voltage	220 V a.c., 380 V a.c. / 440 V a.c.	220 V a.c. 50/60 Hz, 380 V a.c. 50/60 Hz	100-240 V a.c. 50/60 Hz, 100-440 V a.c. 50/60 Hz	100-240 V a.c. 50/60 Hz
Rated current	200 A, 250 A, 320 A, 500 A	25 A, 35 A, 50 A, 70 A	25 A, 35 A	25 A, 45 A
Control type	Phase control, ON/OFF control	Phase control (Shipment Mode), Fixed cycle control(Optional), Variable cycle control(Optional)	Phase control (standard), Variable cycle control (optional)	Phase control, Fixed cycle control (Option), Variable cycle control (Option)
Page	107	108	109	110

Type	Slim Type Single-Phase Thyristor Power Regulators	3-Channel Each Phase Control Thyristor Power Regulators		Slim Type 3-Phase Thyristor Power Regulators
Model	TPR-2SL	TPR-3SL-EP	TPR-3CH-EC	TPR-3SL
Appearance		 NEW	 NEW	
Features	- Alarm output divided into caution and warning - Several Control types available depending on load - Several protection functions - Improved safety by of circuit power supply and load power supply separation (free voltage circuit)	3 individual phase controls available in one product - Setting and monitoring with RS485 communication - Load input power single-phase, and 3-phase available. Free voltage available (100-440 V a.c.) - Several protection functions	3 individual phase controls available in one product - Set up and monitor with Ether CAT communication - Load input power single phase, all three phases possible - Various protection features	- The slimmest type among 3-phase thyristor power regulators under the same rating (110 mm) - The heat sink excellent design and several protection circuits provide high durability. - Improved safety with the separation of circuit power supply and load power supply - Several alarm functions
Power voltage	100-240 V a.c. 50/60 Hz, 380-440 V a.c. 50/60 Hz	100-240 V a.c. 50/60 Hz, 100-440 V a.c. 50/60 Hz		100-240 V a.c. 50/60 Hz, 380-440 V a.c. 50/60 Hz
Rated current	40 A, 55 A, 70 A, 90 A, 110 A, 130 A, 160 A, 200 A	40 A, 55 A, 70 A, 90 A, 130 A, 160 A		
Control type	Phase control, cycle control, ON/OFF control (dip switch selection)	Phase control, fixed cycle control, variable cycle control, ON/OFF control		
Page	111	112	113	114

■ Solid State Relays

Type	Single-phase contactless relay	Single-Phase Solid State Relays For PCB Substrate
Model	SSR-2C	HSR-PD
Appearance	 NEW	
Features	60 °C / 80 °C Temperature detection prevents overheating	- High insulation between input and output - Compact, lightweight, with large capacity - High reliability as non-contact - Zero cross switching
Input voltage	4-32 V d.c.	4-32 V d.c.
Rated load current	25 A, 40 A	3 A, 5 A
Load voltage	90-264 V a.c. 50/60 Hz	90-240 V a.c. 50/60 Hz
Page	115	127

Type	Single-Phase Solid State Relays		3-Phase Solid State Relays	
Model	SSR-2	HSR-2	SSR-3	HSR-3
Appearance	 NEW		 NEW	
Features	- Terminal protection cover for safety - Operation check by operation indicator (red LED) - Zero cross switching/ random switching	- High insulation between input and output - High reliability as non-contact - C-R Snubber, Zero cross switching	- Terminal protection cover for safety - Operation check by operation indicator (red LED) - Zero cross switching / random switching	- High insulation between input and output - High reliability as non-contact - C-R Snubber, Zero cross switching
Input voltage	4.6-32 V d.c., 70-264 V a.c.	4-32 V d.c., 90-264 V d.c.	4.6-32 V d.c., 70-264 V a.c.	4-32 V d.c., 90-264 V d.c.
Rated load current	10 A, 20 A, 30 A, 40 A	10 A, 20 A, 30 A, 40 A, 50 A, 70 A	10 A, 20 A, 30 A, 40 A	10 A, 20 A, 30 A, 40 A, 50 A, 70 A
Load voltage	Low pressure : 90-264 V a.c. 50/60 Hz, High pressure : 90-480 V a.c. 50/60 Hz			
Page	116	118	120	122

Type	Slim Type Single-Phase Solid State Relays	2-Wire Cutoff Solid State Relays	Slim Type 3-Phase Solid State Relays
Model	HSR-SL	HSR-2SLD	HSR-3SL
Appearance			
Features	22.4 mm Slim Type - Load voltage 90 - 264 V a.c. / 90 - 480 V a.c. - High insulation between input and output - C-R Snubber, Zero cross switching	- Status indication with several LED displays - Control each phase simultaneously with the 2-wire disconnection function - When the temperature of heat sink is 60 °C / 80 °C, the alarm output works and operation stops - It has the mandatory functions required from FPD industry	- Improved safety and working convenience with the heat sink one-body type - Can be installed in small spaces with the small design - It is the slimmest type among the 3-phase solid state relays under the same rating (79 mm)
Operating voltage range	4-32 V d.c.		
Rated load current	15 A, 25 A, 40 A	25 A, 40 A	15 A, 25 A, 40 A
Load voltage	Low pressure: 90-264 V a.c. 50/60 Hz, High pressure: 90-480 V a.c. 50/60 Hz		
Page	124	125	126

Power Supplies

Type	DIN Rail Type Power Supplies	Enclosed type Power Supplies	Small Rail Type
Model	DPS	TPS	HNPS
Appearance			
Features	35 mm width DIN Rail installation method - Low output voltage fluctuation - High efficiency and low heat generation - Overcurrent, overvoltage, overheating protection functions	- Input inrush current limit - Output voltage adjustable volume - Overcurrent/overvoltage/short circuit protection/overheating protection	- Easy Rail Installation (DIN) - Output Voltage Variable - Overcurrent Protection - Input Inlet Current Limit
Power output	1output: 15 W, 30 W, 50 W, 75 W, 100 W, 120 W, 180 W, 216W, 240 W 2output: -	15 W, 30 W, 50 W, 75 W, 100 W, 55 W, 100 W, 150 W, 220 W, 230 W, 350 W, 450 W	3 W, 7.5 W
Input voltage	100-240 V a.c., 100-120 V a.c., 200-240 V a.c.		100-240 V a.c. 50/60 Hz
Output voltage	5 V, 12 V, 15 V, 24 V, 48 V	5 V, 12 V, 15 V, 24 V, 48 V, 24/05 V, 24/12 V, 24/24 V	5 V, 12 V, 15 V, 24 V
Voltage fluctuation range	± 5 ~ 10 % (According to internal VR)		±10 % (Variable by volume : V.ADJ)
Protection circuit	Overcurrent, overvoltage, overheating, output short-circuit protection		Overcurrent protection
Dielectric strength	2,700 V a.c. 1 min (Input - Output)		3 kVAC (Input - Output to), 1.5 kVAC (Input - Between FG), 500 V a.c. (Output to FG), (Detection current : 10 mA, to 1 min)
Page	129	128	130

Power Switches

Type	Power Switches	
Model	HY-500	BE
Appearance		
Features	- Directly turn ON/OFF the power of compact electric motor - Exposed type/flush type, plastic/cold rolled steel case - Push buttons for turning ON/OFF electric motors (forward, reverse operations) - Lamp power ON/OFF switch mounting type - Electrical appliances safety certification	- Directly turn ON/OFF the power of compact electric motor - Exposed type/flush type, plastic/cold rolled steel case - Push buttons for turning ON/OFF electric motors (forward, reverse operations) - Waterproof non-flammable ABS Plastic Case
Rated capacity	250 V a.c. 15A	440 V a.c. 15~30 A
Display legends	ON, OFF, FOR, STOP, REV	
Case material	Cold rolled steel case, Plastic	Cold rolled steel case, Non-flammable ABS
Page	139	

Cam Switches

Type	Cam switches	
Model	HY-SQ5/255/305/MRK	SQ4
Appearance		
Features	- HY-SQ5 /305/255 series - Several surfaces (square, Ø25 round, Ø30 round) - Switch-board switch A/S, V/S, C/S standard manufacturing product - Machine tools and electrical installation custom circuit configurations for every industry - HY-MRK - Handle lock function by key lock - Rated current 20 A, high capacity cam switches/custom circuit configuration	- Small Cam switches (48 X 48 mm) 2 operation handles (H type, R type) - Ammeter switch (AS), Voltmeter switch (VS) - Small cam switches with several circuit configurations
Rated insulation voltage	600 V	690 V a.c.
Rated current	10 A	16A-24 V a.c., 8A-48 V a.c., 5A-110 V a.c., 3A-220 V a.c., 1.8A-380 V a.c.
Dielectric strength	2,500 V a.c. for 1 min	
Page	141	140

Main Switches

Type	Main Switches
Model	MAS
Appearance	
Features	- Designed as rapid switching structure for excellent contact reliability - Lock ring applied in the OFF state - Handle and contact parts with detachable structure (MAS-D25) 2 color types of handle and handle guard (red/yellow and black/white) - Ø22, Ø30 (MAS-D25), 4 holes fixed panel mounting - Clear indication of ON/OFF contact status (turning OFF the operation handle will block all contacts)
Rated insulation voltage	690 V a.c.
Rated current	25 A, 63 A, 125 A
Materials	Non-flammable
Page	140

■ Foot Switches

Type	Foot Switches
Model	HY-100
Appearance	
Features	- High mechanical safety with the aluminum case - Micro switch with excellent electrical reliability built-in - Protective cover from falling materials and safety latch lever attached. (HY-104) - Cable locker applied (HY-103, 104) - Cost-effective plastic case (HY-101)
Rated current	10 A 250 V a.c.
Foot switch materials	Plastic, aluminum
Contact structure	C Contact
Page	145

■ Mono Lever Switches

Type	Mono Lever Switches
Model	LEL/LES
Appearance	
Features	4-direction switches that can operate 4 directions in a single lever - The lever tilting direction minimizes malfunctions during use and it is suitable for products that are frequently switched in direction. - There are auto returning, manual returning and mixed types depending on lever operation type.
Rated insulation voltage	600 V
Rated electric current	3 A 250 V a.c.
Dielectric strength	2,500 V a.c. for 1 min
Page	145

■ Pendant Switches

Type	Pendant Switches
Model	HY-P series
Appearance	 NEW
Features	- Easy wiring and operation with the wire holder bending structure (15°) - Solidity improved with the thicker high impact ABS resin, and anti-slip structure - The wide internal wiring space makes wiring easier and more convenient - Several new features on-demand (LED, volume, toggle switch).
Degree of protection	IP-65 (IEC 60529) (emergency switch type included)
Materials	Case : high impact ABS, Contacts : AgSnO2
Insulation resistance	Min. 100 MΩ (500 V d.c.)
Page	146

■ Sign Towers

Type	Ø25 Modular LED Sign Towers	Ø60 Modular LED Sign Towers	Ø55 Sign Towers
Model	STE025	STE060	HY-TN
Appearance			
Feature	- Ø25 column type, suitable installation structure for small machines and narrow spaces - Long life with high brightness LED light source 1~3 stacks and 3 color types - Easy installation with pipe direct installation structure	- Long life with the high brightness LED light source - Simple structure from 1 to 5 stacks - Several mounting supporters - Convenient configuration (number of stacks and colors) with the modular type	- Ø55 round type 1~5 stacks and 5 color types - Incandescent bulb type
Function	Continuous light only	Continuous light, continuous light/flashing/buzzer (selection by external signal)	
Diameter	Ø25	Ø60	Ø55
Supporter	L type bracket (sold separately)	Plastic round supporter, L type bracket, elbow type supporter (optional)	Plastic round supporter, L type bracket, elbow type supporter (optional), Plastic supporter with pipe connection
Rated voltage	24 V d.c.	24 V d.c., 100-240 V a.c. 50/60 Hz	24 V d.c., 220 V a.c. 50/60 Hz
Number of stacks & colors	1~3 stacks (red, green, yellow)	1~5 stacks (red, green, yellow, blue, white)	
Page	153	152	151

Type	Ø40, Ø60, Ø80 LED Sign Towers	Ø25, Ø40, Ø60, Ø80 LED Sign Towers
Model	STS	STL
Appearance		
Features	- Several sizes (Ø40, Ø60, Ø80) - Long life with the high brightness LED light source 1~5 stacks and 5 color types 3 installation types	- Several sizes (Ø25, Ø40, Ø60, Ø80) 1~5 stacks and 5 color types - Convenient installation with the aluminium pipe direct installation structure
Function	Continuous light only	Continuous light/flashing/buzzer models (selection by external signal)
Diameter	Ø40, Ø60, Ø80	Ø25 Ø40, Ø60, Ø80
Supporter	Plastic round supporter, L type bracket, elbow type supporter (optional)	Plastic round supporter, L type bracket, elbow type supporter (optional)
Rated voltage	24 V a.c. 50/60 Hz or 24 V d.c., 12 V a.c. 50/60 Hz or 12 V d.c. (Order-made)	24 V d.c., 24 V a.c. 50/60 Hz or 24 V d.c., 100-240 V a.c. 50/60 Hz
Number of stacks & colors	1~5 stacks (red, green, yellow, blue, white)	
Page	149	150

■ Indicating Lights

Type	LED Wall Mounted Lights
Model	WME WMS
Appearance	
Features	3-color slim type, suitable for wall mounting - Long life with the high brightness LED light source 2 body type: beige or chrome plated - Continuous light, flashing light, 2-melody buzzer built-in - Degree of protection IP54 (IEC 60529)
Rated voltage	24 V a.c. 50/60 Hz or 24 V d.c., 12 V a.c. 50/60 Hz or 12 V d.c. (Order-made)
Functions	Continuous light - flashing - buzzers
Number of stacks and colors	3 Tires Red, Green, Yellow 1~5 Tires Red, Green, Yellow, Blue, White
Page	154

■ Panel lamp

Type	LED Basic Panel Lamp
Model	HL
Appearance	 NEW
Features	- Easy to install in tight spaces - Protection from obstruction through an internal protection circuit. - Improved cost-effectiveness through non-insulated SMPS methods. - High Efficiency LED Recruitment (using LG Innotech G3 series LEDs)
Rated voltage	220 V a.c.
Number of stacks and colors	Light Color
Page	153

■ Turn Lights

Type	Signal Lights (Xenon)	Ø84 LED Signal Lights	Ø70 LED Signal Lights
Model	RLA-WX/WXB	LT	SLB
Appearance			
Features	· Ø118 Rotating continuous light only, rotating continuous light and buzzers built-in · Excellent instant light emitting and high brightness · Less current consumption compares to the rotating light and 4 times longer life expectancy compared to the regular lamp · Simple attaching/detaching due to the permanent magnet attachment type (for cars) · Degree of protection IP54 (IEC 60529)	· Rotational flickering function by the sequential flashing · Long life with the high brightness LED light source · Ø84 round cap, direct or supporter mounting · Acrylic cap for excellent visible light transmittance · Solid and smart design · Degree of protection IP54 (IEC 60529)	· Continuous light, flashing light, buzzer (selection by external signal) · Long life with the high brightness LED light source · Select Ø70 round type cap, rectangular type cap, direct installation, supporter mounting installation · Cost-effective, simple installation structure · Solid polycarbonate protective cap · Degree of protection IP54 (IEC 60529)
Diameter	Ø118	Ø84	Ø70
Rated voltage	110 V a.c. 50/60 Hz, 220 V a.c. 50/60 Hz, 12 V d.c., 24 V d.c.	12-24 V a.c. 50/60 Hz, 110/220 V a.c. 50/60 Hz, 12-48 V d.c.	12 V a.c. 50/60Hz or 12 V d.c., 24 V a.c. 50/60 Hz or 24 V d.c., 110-240 V a.c. 50/60 Hz
Functions	Rotating continuous light · buzzers	Rotating continuous light · Flashing · Buzzer built-in	Lit, flashing, buzzer (selected by external input signal)
Colors	Red, blue, white	Red, yellow, green, blue	Red, yellow, green
Page	156	157	

■ Warning Lights

Type	Ø60 / Ø84 / Ø100 / Ø150 Revolving Warning Lights					
Model	T060 / T084	T060 / T084	T060 / T084 T100 / T150	T060 / T084 / T100	T060 / T084 T100 / T150	T060 / T084 / T100
Appearance	LED  NEW					
Features	· Ø60 / Ø84 / Ø100 / Ø150 Rotating continuous light, rotating continuous light and buzzers · High luminance LED light source bright and long life · Several supporter mounting type · Cost-effective, simple installation structure · Solid polycarbonate protective cap · Rotational structure with the excellent abrasion resistive acetal gear · Degree of protection IP54					
Diameter	Ø60, Ø84, Ø100, Ø150					
Rated voltage	● 12 V d.c. : 0.08 A, ● 24 V d.c. : 0.06 A, ● 110 - 220 V a.c. : 0.03 A				● 12 V d.c. : 0.09 A, ● 24 V d.c. : 0.07 A, ● 110 - 220 V a.c. : 0.04 A	
Functions	Rotating continuous light · buzzers					
Colors	Red, Yellow, Green, Blue					
Page	155					

■ Buzzers

Type	Power Buzzers	4-Tone Buzzers	3-Tone Electronic Buzzers
Model	HY-256/306/606/606N	HY-606MD/MA	HY-226M/256M
Appearance			
Features	· Compact size, lightweight, high capacity buzzer melody · Excellent alarm function · Suitable for panel installation · Low Power consumption	· Compact, light weight, high capacity tones · Low Power consumption and long life expectancy · Simple installation structure with the panel installation type	· Compact, lightweight, with 3 melodies · Front LED illuminates during buzzer operation · Simple installation structure with the panel installation type · Low Power consumption
Rated voltage	110 V a.c. 50/60 Hz, 220 V a.c. 50/60 Hz, 12 V d.c., 24 V d.c.	110 V a.c. 50/60Hz, 220 V a.c. 50/60 Hz 12d.c., 24 V d.c.,	100-240 V a.c. 50/60 Hz, 12 V d.c., 24 V d.c.
Power consumption	4 VA, 8 VA, 30 mA	2.5 W	0.6 W, 13.5 W
Volume (1 m distance)	85 dB max	98 dB max	80 dB max
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■ Terminal Blocks

Type	Assembly Terminal Blocks		Fixing Type Terminal Blocks
Model	HYBT-15A2	HYTM	HYT
Appearance		 NEW	 NEW
Features	- DIN rail installation structure - Possible to assemble the terminal block with different capacity to the same fixing plate - Excellent attaching / detaching of terminal at the temporal position	- New design (simple and robust image) - Contact protective structure for the terminal block live parts - O-type and Y-type crimp terminal use more convenient with the screw self-up structure - Din Rail one-touch assemblable and detachable structure (using slotted screwdriver during removal)	- Several polarities for each current capacity, easy selection - Body made of phenolic resin (60 - 500 A) and ABS flame retardant resin (10 - 30 A) - Because the bolt and plate underwent heat treatment and rust-proof treatment, it has excellent electrical and mechanical characteristics - Standard product of rated current - Simple installation
Rated insulation voltage	600 V		
Rated current	15 A	15 A, 25 A, 35 A, 60 A, 100 A	10 A, 20 A, 30 A, 60 A, 100 A, 150 A, 200 A, 300 A, 400 A, 500 A
Insulation resistance	Min. 100 MΩ (between each charging part and between each charging part and mounting metal plate)		
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■ Fuse Holders

Type	Fuse Holders
Model	HY-F15/HY-F30
Appearance	
Features	● HY-F15 series - LED continuous light indication during fuse disconnection / safety cover installation structure - DIN rail and bolt fixing structure / Easy installation by 1P, 2P, 3P individual products ● HY-F30 series - Body materials are made of NYLON66 with glass fiber and have excellent electrical insulation, strong against impact and heat - The fuse comes out when replacing it, which provides excellent safety
Rated current	250 V a.c. 15 A, 24 V d.c. 10 A, 600 V a.c. 30 A
Remarks	110-220 V a.c., 12-24 V d.c., 110-600 V a.c.
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■ Cable Connectors

Type	Cable Connectors
Model	HYC-M1/HYC-M2
Appearance	
Features	- Applied as waterproof and spinning-proof when extending the cable from many machine tools - PF 1/2 cover fixing type nut - Nut tightening structure by the seal rubber and stuffing washer
Materials	PC (Resin)
Remarks	Ø8, Ø11
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■ Control Boxes

Type	Rolled Steel Control Boxes
Model	HY-25/HY-30
Appearance	 UPGRADE
Features	- Rolled iron and ivory color enamel painted - Several operating switches attached (Ø25 and Ø30) - Several specifications (1 ~ 6 holes)
Materials	Rolled steel
Remarks	Ø25, Ø30
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